

REMARKS

RECORD OF TELEPHONIC INTERVIEW

A Formal Interview was conducted via telephone on June 17, 2003 with Examiner Hung Vy and Supervisory Primary Examiner Paul Ip. Specifically addressed was the relevance of Urakami, et al. (U.S. 5,491,329) to the subject matter of Claim 1 and other related claims. It was concluded that Urakami does not teach the amplifier element recited in Claim 1. However, the Interview Summary mailed by the USPTO on June 23, 2003 makes no record of the above. Therefore, Applicant will discuss the inapplicability of Urakami to the subject matter of Claim 1 herein.

The Supervisory Primary Examiner also asserted that Taguchi, et al. (U.S. 6,345,062) and Bielas (U.S. 6,359,918) as well as King, et al. (U.S. 5,812,572) cited in the prior Office Action) do teach the amplifier element of Claim 1. The Supervisory Primary Examiner requested that Applicant further define the coupling between the laser diode and the amplifier, asserting that Claim 1 is inoperable and indistinguishable over Taguchi. Applicant herein responds to the above-stated assertions below (and above via Amendment).

1.Objections to the Drawings

The Examiner has objected to the drawings according to the Patent Draftsperson's review. The supplied drawings are informal drawings, Applicant intends to supply formal drawings in conjunction with either a Notice of Allowance or Notice to File Corrected Drawings (for publication). Applicant asks that the objections to the drawings be held in abeyance. The Examiner has not indicated that the objections to the drawings will not be held in abeyance.

2. Claim Rejections under 35 U.S.C. §112

In the Office Action, the Examiner has rejected Claims 12-22 and 41 under 35 U.S.C. §112 as being indefinite.

Specifically, regarding Claim 12, the Examiner has asserted that there is no limitation in Claim 12 for adjusting a transition time of an AC signal, as there is no recitation of how the control circuit adjusts the transition time of the AC signal. Applicant has amended Claim 12 to point out that the adjustment of transition time is performed by "the control circuit having an adjustable response whereby a transition time of said AC signal may be adjusted."

The Examiner has further rejected Claims 13 and 15, as the element "programmable capacitor array" is unsupported by the specification, specifically Figure 5, stating that Claims 13 and 15 are thereby rendered unclear. Applicant has amended Claims 13-16 to more particularly point out that the capacitor array is an array of capacitors having a selectable capacitance.

The Examiner has also rejected Claim 41, stating that the specification does not support the recitation of "programmable resistor array" as Figure 4 shows only a resistor array. Applicant has amended Claim 41 to more particularly point out that the resistor array is an array of resistors having a selectable resistance value.

For the reasons stated above, Applicant believes that the rejections of the Claims under 35 U.S.C. §112 have been overcome.

3. Claim Rejections under 35 U.S.C. §102

In the Office Action, the Examiner has rejected Claims 1-6, 9-12, 23-40 and 42-50 under 35 U.S.C. 102(b) as being anticipated by Urakami. As discussed in the record of telephonic interview above, it was determined that Urakami does not teach the features of Claim 1, specifically Urakami does not teach an amplifier having a control input for controlling maximum swing of the

amplifier. However, according to the Interview Summary mentioned above, no agreement as to Urakami was reached. In Urakami, the AC modulation signal is applied through a passive combiner network 120 (superimposing unit) as depicted in Figure 3 and Figure 2 for combining the AC modulation signal with a DC bias signal. The output of an oscillator is applied to a capacitor 132 and nowhere in Urakami is an amplifier having a control input for controlling the maximum signal swing of the modulation signal. Therefore, Urakami does not teach the elements recited in Claim 1 (and similarly independent Claims 9,10 and 28, as well as associated dependent Claims 2-6 and 11).

Further, according to the arguments put forth by the Supervisory Primary Examiner in the telephonic interview described above, it is necessary to distinguish the subject matter of Claim 1 and other related Claims from the circuits taught in Taguchi, et al. (U.S. 6,345,062) and Bielas (U.S. 6,359,918).

Amended Claim 1 (and similarly independent Claims 9,10 and 28, as well as associated dependent Claims 2-6 and 11) recites an amplifier having an output capacitively coupled to a laser diode for superimposing an AC signal on the laser diode DC operating point, whereby the AC signal modulates an intensity of light emitted by the laser diode, and wherein said amplifier has a

control input for controlling a maximum output swing of said amplifier. Amended Claim 1 further includes a control circuit coupled to the control input of the amplifier for setting said maximum output swing of the amplifier and a programmable memory coupled to the control circuit for storing values for controlling the maximum output swing, whereby an amplitude of the AC signal is controlled, thereby controlling the modulation independently from settings of said DC operating point.

Taguchi does not teach a controllable and capacitively coupled amplifier for providing the AC signal to the laser diode, nor does Taguchi teach independent control of the AC modulation from the bias control. The external variable resistor (4) used in the prior art Figure 1 circuit of Taguchi sets the DC bias and modulation amplitude together and not independently. The actual embodiments of Taguchi teach away from the use of an amplifier having a control input for controlling the maximum signal swing of the modulation, as in the embodiments of Figures 4-7 there is no control input on the amplifiers. The embodiment of Figure 8 uses a switch and not an amplifier similar to that of King, and in the embodiment of Figure 9 the AC modulation signal is applied directly to the output, past the controlled amplifier. The embodiment of Figure 10 is similar to the prior art circuit of Figure 1, in that the modulation and bias are not separately

adjustable. Finally, none of the embodiments of Taguchi teach capacitively coupling an amplifier having adjustable modulation swing to the laser diode.

Bielas does not teach modulation of the laser diode at all. The only AC modulation appearing in Bielas is modulation applied to an optical modulator 28 in Figure 4. Therefore Bielas does not teach the capacitively coupled amplifier recited in claim 1 that provides an AC signal to the laser diode.

King, as explained in the Amendment filed on December 27, 2002 does not teach an amplifier providing AC modulation to the laser diode, but rather teaches a logic gate having a settable current. Further, King does not teach capacitively coupling the amplifier.

For the above-stated reasons, Applicant believes that none of the references, taken separately or in combination, teach or suggest the amplifier and control element structural and functional features recited in Claim 1 and similarly in Claims 9,10 and 28. Therefore, Applicant believes that the rejection of Claims 1-6, 9-11 and 28 under 35 U.S.C. §102(b) has been traversed and that Claims 1-6, 9-11 and 28 should be allowed. Applicant also

believes that Claims 7 and 8 should be allowed because Claim 1 is allowable.

Claim 12 (and similarly independent Claims 23, 24 and 29, as well as their dependent claims 13-22, 25-27 and 30-36) recite a control circuit (or other means or method steps) for controlling a response time of a control circuit that couples and amplifier that provides the AC modulation to the laser diode, whereby a transition time of the AC modulation may be adjusted. None of the above-cited references teach such control of response time. In the Office Action, the Examiner points to Urakami col. 3, lines 50-58 in support of adjustment of AC transition time. Applicant respectfully disagrees. Nowhere in Urakami or in any other cited reference, is the adjustment of AC transition time via a control circuit taught or suggested. In Urakami the response time is not adjusted or adjustable at all. Therefore, Applicant believes that the rejection of Claims 12 and 23-36 under 35 U.S.C. §102(b) has been traversed and that Claims 12 and 23-36 should be allowed.

Finally, with respect to the rejection under 35 U.S.C. §102(b), Claim 37 (and similarly other independent Claims 45 and 46, as well as associated dependent Claims 38-44 and 47-50) recites an improved bias circuit including: "a voltage reference coupled to said power supply rail for biasing a monitor diode

optically coupled to said laser diode, such that variations in said power supply rail are not reflected in the bias imposed on said monitor diode." Urakami does not teach such voltage reference. The Examiner does not mention the voltage reference element in the rejection under 35 U.S.C. §102(b) and it is clear the Urakami does not teach details of a monitor diode circuit, neither does Bielas, which is concerned with temperature, not intensity control. Taguchi (and King as argued in the Amendment filed December 27, 2002) teaches direct connection of the monitor diode to the power supply rail. There should be no confusion as between a power supply rail and the voltage reference of the above-listed Claims, as the power supply rail is included therein as a separate element of the Claims. Therefore, for the above-stated reasons Claims 37-50 should be allowed.

For each and all of the above-stated reasons, Applicant believes that the rejection under 35 U.S.C. §102(b) has been traversed and that Claims 1-6, 9-12, 23-40 and 42-50 should be allowed.

4. Claim Rejections under 35 U.S.C. §103

In the Office Action, the Examiner has rejected Claims 13-22, and 41 under 35 U.S.C. 103(a) as being unpatentable over Urakami in view of Kowalski, et al. (U.S. 6,034,446) and in further view

of Swanson (U.S. 6,310,518). For the reasons stated above, Claims 13-22 includes a control circuit (or other means or method steps) for controlling a response time of a control circuit that couples and amplifier that provides the AC modulation to the laser diode, whereby a transition time of the AC modulation may be adjusted and Urakami does not teach or suggest such response time control. Neither does Kowalski or Swanson. Kowalski is directed toward memory cells, not laser diode control and therefore does not include the elements of the present invention. Swanson discloses a programmable gain amplifier, but does not teach or suggest the subject matter of the above-listed claims. Therefore Applicant believes that the rejections under 35 U.S.C. 103(a) are overcome and that Claims 13-22 and 41 should be allowed.

CONCLUSION

In conclusion, Applicant respectfully submits that this Amendment, in view of the Remarks offered in conjunction therewith, is fully responsive to all aspects of the objections and rejections tendered by the Examiner in the Office Action. Applicant respectfully submits that he has demonstrated that the above-identified Patent Application, including Claims 1-50, is in condition for allowance. Such action is earnestly solicited.

No fee is believed to be required in connection with this Amendment. However, if there are any fees incurred by this Amendment Letter, please deduct them from our deposit account No. 23-0830.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Andrew M. Harris". The signature is written in a cursive, slightly slanted style.

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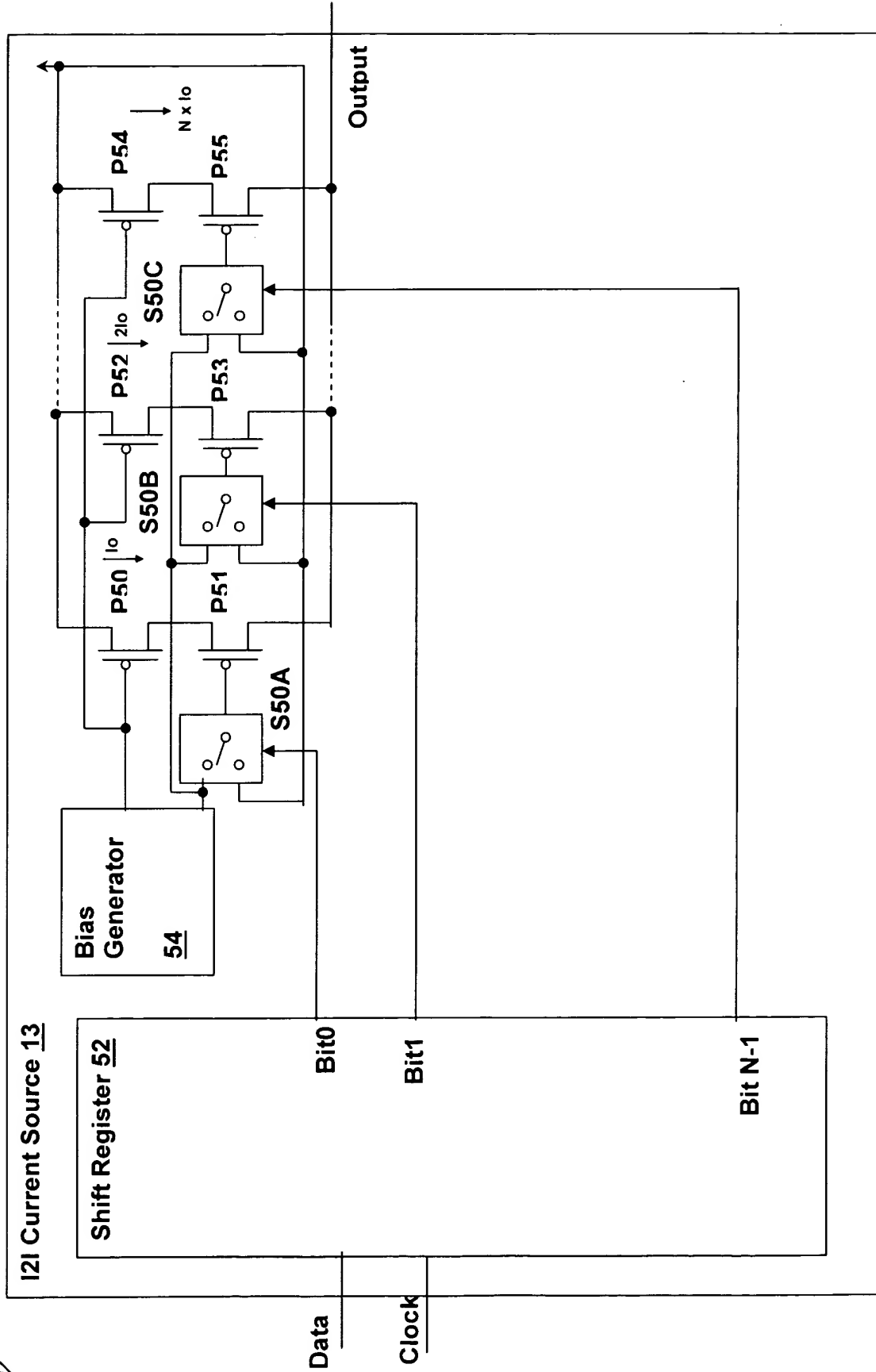
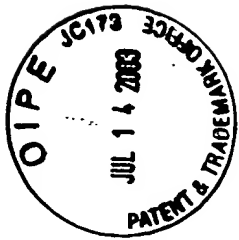


Fig. 6